

**REMARKS**

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

**Status of Claims:**

No claims are currently being added, cancelled or amended.

A detailed listing of all claims that are, or were, in the application, irrespective of whether the claims remain under examination in the application, is presented, with an appropriate defined status identifier.

Claims 1-21 remain pending in this application.

**Objection to the Title:**

In the Office Action, the title was objected to because it was not sufficiently descriptive. By way of this amendment and reply, a more descriptive title is being presented.

**Claim Rejections – Prior Art:**

In the Office Action, claims 1-21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Uchida (U.S. Patent No. 6,330,620) in view of Tsurumaki (JP Pub. No. 2001-256000). With respect to claims 1-21, the rejection is respectfully traversed.

Independent claim 1 recites a disk array device including a component that can be degraded, comprising:

“a trouble point storage unit which stores a point value of the component;

a point update unit which subtracts a predetermined point value from the point value stored in said trouble point storage unit and stores the subtracted point value in said trouble point storage unit, when a processing fault occurs on the component;

a degradation unit which degrades the component when the point value stored in said trouble point storage unit falls below a reference value; and

a trouble point recovery unit which adds an another **predetermined** point value to the point value stored in said trouble point storage unit, when a

predetermined time period passes since the trouble point recovery unit had added to the point value a last time.” (Emphasis Added).

A disk array device including the above-quoted features has at least the advantages that: (i) a point update unit allows for subtracting a predetermined point value from a point value stored in a trouble point storage unit, and for storing the subtracted point value in the trouble point storage unit, when a processing fault occurs on a component; (ii) a trouble point recovery unit allows for adding an another predetermined point value to the point value stored in the trouble point storage unit when a predetermined time period passes since the trouble point recovery unit had added to the point value a last time; and (iii) a degradation unit allows for degrading the component when the point value stored in the trouble point storage unit falls below a reference value. (Applicant’s Specification; page 2, line 45 – page 3, line 1; page 11, line 7 – page 13, line 8).

Neither Uchida nor Tsurumaki, alone or in combination, discloses or suggests a disk array device including the above-quoted features with a trouble point recovery unit which adds an another predetermined point value to a point value stored in a trouble point storage unit when a predetermined time period passes since the trouble point recovery unit had added to the point value a last time. The Examiner recognizes that, “Uchida fails to explicitly disclose adding a point value after a predetermined time period passes”. (Office Action; page 3). The Examiner then points to paragraphs [0023] through [0026] of Tsurumaki as teaching, “a trouble point recovery unit, which adds an another predetermined point value to the point value stored in said trouble point storage unit, when a predetermined time period passes since the trouble point recovery unit had added to the point value a last time”. (Office Action; page 3) (Emphasis Added).

However, Tsurumaki does not teach a trouble point recovery unit, which adds an another predetermined point value to a point value stored in a trouble point storage unit when a predetermined time period passes since the trouble point recovery unit had added to the point value a last time.

First, as noted in the previously-filed response, it should be understood that the system of Tsurumaki does not add a predetermined point value to a point value stored in a trouble point storage unit. (Tsurumaki; paragraphs [0024], [0026], [0027], [0030], and [0031]). Instead, in the system of Tsurumaki, when an I/O data transfer is performed, a time amount

that a magnetic disk spends on the I/O process is recorded as a time delay value, and then that time delay value is added to an accumulation timer value. (Tsurumaki; paragraphs [0024], [0030], and [0031]). The time amount that the disk spends on the I/O process in the system of Tsurumaki is not a predetermined value, but rather is a variable value that must be measured each time an I/O data transfer is performed in the system of Tsurumaki. (Tsurumaki; paragraphs [0012], [0018], [0024], [0025], [0030], and [0031]).

The fact that the term “predetermined point value” is used in claim 1 means that the same value is subtracted from the point value stored in the trouble point storage unit each time a processing fault occurs. In Tsurumaki, on the other hand, the time amount that a disk spends on an I/O process in Tsurumaki is clearly variable, because the problem that Tsurumaki is addressing is I/O data transfer delays that occur due to abnormalities. (Tsurumaki; paragraphs [0002], [0003], [0024], and [0030]). Thus, when the system of Tsurumaki adds a time amount which a disk spent on an I/O process to an accumulated value, the system of Tsurumaki is not adding the same predetermined value to the accumulated value, but rather is adding a different value, that being a variable value (with respect to the previous value added), to the accumulated value. (Tsurumaki; paragraphs [0024], [0030], and [0031]).

Second, it should be understood that the system of Tsurumaki does not add a point value to a point value stored in a trouble point storage unit when a predetermined time period passes since the trouble point recovery unit had added to the point value a last time. As explained in paragraphs [0024] and [0025] of Tsurumaki, the data control means 5 adds the time amount that a magnetic disk spent on an I/O process to an accumulation timer value whenever a data transfer delay occurs. (Tsurumaki; paragraphs [0024] and [0025]). Thus, the system of Tsurumaki does not add a value after a predetermined time period passes since the last time a value was added, but rather adds a value whenever a data transfer delay occurs, which may be at variable times. (Tsurumaki; paragraphs [0024] and [0025]).

Thus, unlike the presently claimed invention in which a predetermined time period passes to cause the trouble point recovery unit to add the another predetermined point value to the point value stored in the trouble point storage unit, Tsurumaki instead has a variable time period that passes, whereby a variable point value is then added to a stored point value.

In the “Response to Arguments” section of the Office Action, it first asserts that a reasonably broad interpretation of predetermined value does not entail a non-variable value. However, this assertion is clearly incorrect, since by definition, “predetermined value” is the same each time it is utilized in the system (e.g., each time it is added or subtracted from the stored point value). Accordingly, it cannot by definition be a variable value, or otherwise it would be called “variable value” or “changeable value” (or something to that effect).

The “Response to Arguments” section of the Office Action next asserts that since Tsurumaki discloses the function for specifying the magnetic disk which data transfer delay generates continuously from the hour entry concerning the data transfer for every I/O of all the magnetic disks that constitute the logical disk, the delay value is added in a continuous manner. From this description, the Office Action goes on to assert that “a certain fixed time can be aimed at, and it is effective in the ability to make the rate of degradation low and make dependability high.”

In reply, it is clear that Tsurumaki does not teach or suggest the adding (or subtracting) of another predetermined point value to a stored point value when a predetermined time period passes since a trouble point recovery unit has added to the point value a last time, since Tsurumaki would cause an addition or subtraction at variable points in time, and not at predetermined points in time (e.g., not periodically). The fact that Tsurumaki can determine a magnetic disk having a data transfer delay that is generated continuously, is not pertinent to the addition or subtraction of another predetermined point value after a predetermined time period has passed since the last time the point value was added to.

Therefore, independent claim 1 is neither disclosed nor suggested by the Uchida and Tsurumaki references, alone or in combination, and, thus, is believed to be allowable. The Patent Office has not made out a *prima facie* case of obviousness under 35 U.S.C. 103.

Independent claim 2 recites a disk array device with features similar to features of a disk array device of independent claim 1, except that claim 2 recites “a point update unit which adds a predetermined point value from the point value stored in said trouble point storage unit and stores the added point value in said trouble point storage unit, when a processing fault occurs on the component”, and “a trouble point recovery unit which subtracts an another predetermined point value to the point value stored in said trouble point storage unit, when a predetermined time period passes since the trouble point recovery unit had subtracted to the point value a last time”, and “a degradation unit which degrades the

component when the point value stored in said trouble point storage unit exceeds a reference value". Therefore, independent claim 2 is believed to be allowable for at least the same reasons that independent claim 1 is believed to be allowable.

Independent claims 3, 8, 9, 12, 14, 17, 19, 20, and 21 are believed to be allowable for at least the same reasons indicated above discussing that neither Uchida nor Tsurumaki disclose or suggest a disk array device of independent claim 1.

Independent claims 13 recites a component degradation method with features similar to features of a disk array device of independent claim 2 and, thus, is believed to be allowable for at least the same reasons that independent claim 2 is believed to be allowable.

The dependent claims are deemed allowable for at least the same reasons indicated above with regard to the independent claims from which they depend.

**Conclusion:**

Since all of the issues raised in the Office Action have been addressed in this Amendment and Reply, Applicant believes that the present application is now in condition for allowance, and an early indication of allowance is respectfully requested.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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